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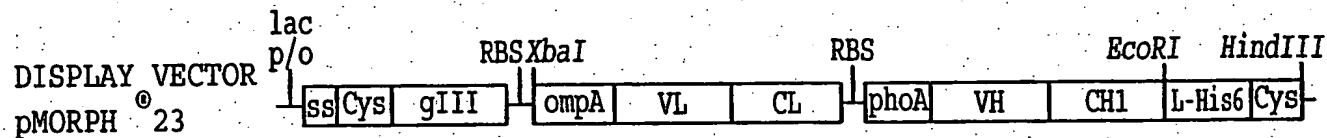


FIG. 1

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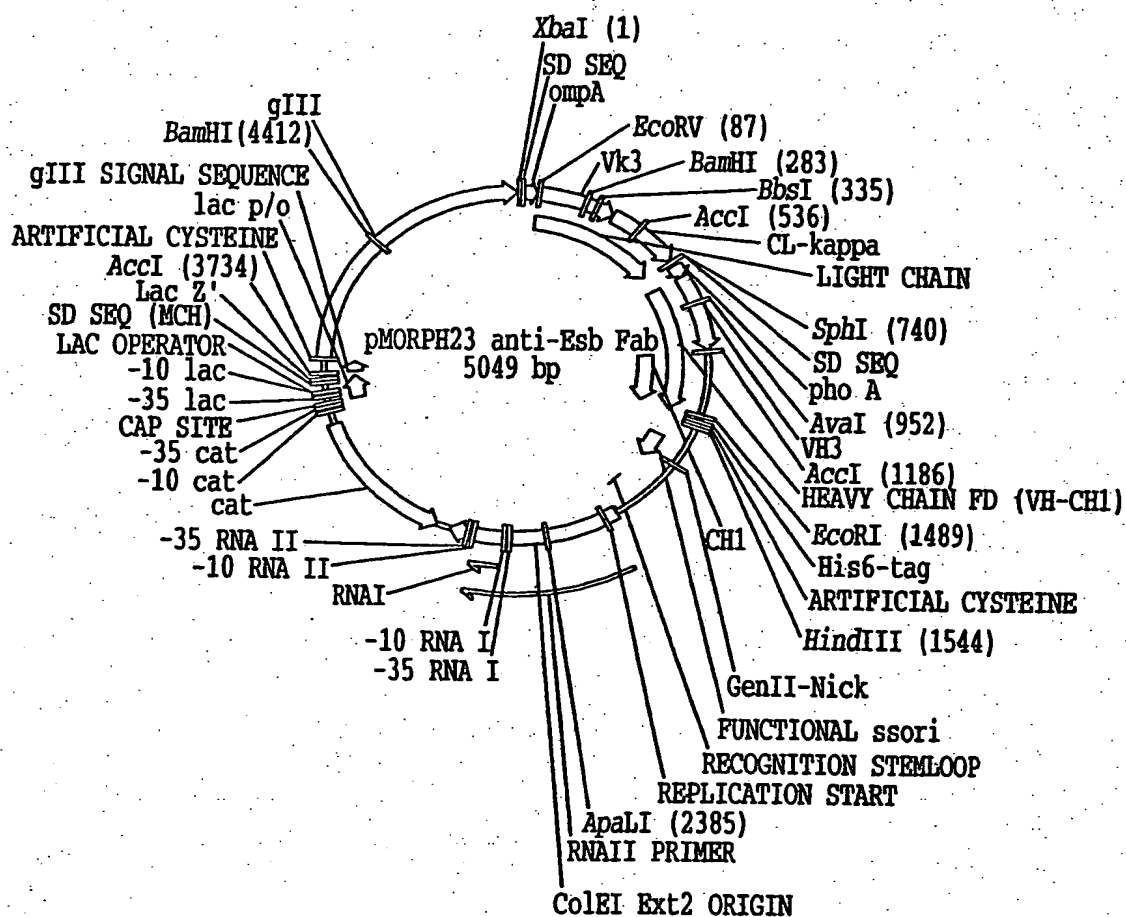


FIG. 2A

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**XbaI** **RuCl Primer #3 100.0%** **EcoRV**  
 1 CTAGATAACG AGGGCAAAAA ATGAAAAAGA CAGCTATCGC GATTGCACTG GCACTGGCTG GTTTCGCTAC CGTAGGGCAG GCGATATCG TGCTGACCCA  
 GATCTATTGC TCCCGTTTTT TACTTTTTCT GTCGATAGCG CTAACGTCAC CGTGACCGAC CAAAGCGATG GCATCGCGTC CGGCTATAGC ACCTGCGGT  
 101 GAGCCCCGGG ACCCTGAGCC TGTCTCCGGG CGAACGTCGG ACCCTGAGCT GCAGAGCGAG CCAGTCTGTT TCTCGTCTCT ATCTGGCTTG GTACCAGCAG  
 CTCGGGCGCG TGGACTTCGG ACAGAGGCGC GCTTGCACGC TGGACTTCGA CGTCTCGCTC GGTGAGACAA AGAGCAAGAA TAGACCGAAC CATGCTGCTC  
 201 AAACCAGGTC AAGCACCAGC TCTATTAAAT TATGGTGTCT CTGCTGCTGC AACTGGGGTC CCGGCGCGTT TTAGCGGCTC TGGATCCGGC ACGGATTTTA  
 TTTGGTCCAG TTCGTGGCGC AGATAATTAA ATACCACGAA GAGCAGCAGC TTGACCCGAG GCGCGCGCAA AATCGCGCAG ACCTAGGCGC TGCCTAAAT  
**BbsI** **MscI**  
 301 CCGTGACCAT TAGCAGCCTG GAACCTGAAG ACTTTGCGAC TTATTATTGC CAGCAGCGTG GTAATTATTC TATTACCTTT GCGCAGGGTA CGAAAGTTGA  
 GGGACTGGTA ATCGTCCGAC CTTGGACTTC TGAACCGCTG AATAATAACG GTCGTCCGAC CATTATAAG ATAATGGAAA CCGTCCCAT GCTTTCACAT  
**BsiNI**  
 401 AATTAAACGT ACGGTGGCTG CTCCGAGCGT GTTTATTTTT CCGCCGAGCG ATGAACAAC TAAAAGCGG ACGGCGAGCG TGGTGTGCTT GCTGAACAAC  
 TTAATTTGCA TGCCACCGAC GAGGCTCGCA CAAATAAAAA GCGGCTCGC TACTTGTGTA CTTTTCGCGG TCGCGCTCGC ACCACACGGA CGACTTGTG  
 501 TTTTATCCCG GTGAAGCGAA AGTTCAGTGG AAAGTAGACA ACGCGCTGCA AAGCGGCAAC AGCCAGGAAA GCGTGACCGA ACAGGATAGC AAAGATAGCA  
 AAAATAGCGG CACTTCGCTT TCAAGTCACC TTTTCATCTG TCGCGGACGT TTGCGCGTGG TCGGTCTCTT CCGACTGGCT TGTCTATCG TTTCTATCGT  
 601 CTTATTCTCT GAGCAGCACC CTGACCCTGA GCAAGCGGA TTATGAAAAA CATAAGTGT ATGCGTGGCA AGTGACCCAT CAAGGTCTGA GCAGCCCGGT  
 GGATAAGAGA CTCGTGCTGG GACTGGGACT CGTTTCGCTT AATACCTTTT GTATTTCACA TAAGCAGCGT TCACTGGGTA GTTCCAGACT CGTGGGCGCA  
**RuCl for 100.0%**  
**StuI** **SphI** **SapI**  
**RuCl Primer #1 100.0%**  
 701 GACTAAATCT TTTAATCGTG GCGAGGCTG ATAAGCATGC GTAGGAGAAA ATAAATGAA ACAAGCACT ATTGCACTGG CACTCTTACC GTTCTCTTC  
 CTGATTAGA AAATTAGCAC CGCTCCGAC TATTCGTAGC CATCTCTTT TATTTTACTT TGTTTCGTGA TAAGTGACG GTGAGAATGG CAAGGAGAG  
**RuCl for 100.0%** **MfeI**  
 801 ACCCTCTGTTA CCAAAGCCCA GGTGCAATG GTGGAAGCG GCGCGGCTT GGTGCAACCG GCGGCGAGC TCGTCTGAG CTGGGCGGCC TCCGATTTA  
 TGGGACAAT GGTTCGGGT CCACGTTAAC CACCTTTCG CCGCGCGGA CCAGTTCGG CCGCGCTCG AGCGAGCTC GAGCGCGCG AGGCTAAAT  
 901 CCTTTCTTC TTATGCTGT AATTGGTGC GCCAAGCCCC TGGGAAGGT CTCGAGTGG TGAGCGGTAT CCATTATTCT GGTAGCTCTA CCTATTATG  
 GGAAGAAG AATACACCA TTAACCCAG CGGTTCGGG ACCCTTCCA GAGCTCACC ACTCGGCATA GGTAAATAA CCATCGAGAT GGATAATAG  
 1001 GGATAGCGTG AAAGGCGGT TTACCATTC ACGTGATAAT TCGAAAAA CCGTGTATCT GCAATGAAC AGCCTGCGT GGAAGATAC GCGGTGTAT  
 CCTATCGAC TTTCCGGCA AATGTAAAG TGCACATTA AGCTTTTGT GGGACATAGA CGTTTACTT TCGGAGCGAC GCCTTCTATG CCGCACATA  
**Sall**  
**BssHI** **SapI** **StyI** **BlpI**  
 1101 TATTGCGCGC GTGCTCTTCA TAAGTGGGCT GGTGGGGTT TTGATCATG GGGCCAAGG ACCCTGGTGA CGGTAGCTC AGGCTGACC AAAGTCCAA  
 ATAAAGCGCG CACGAGAAT ATTACCCGA CCAACCCCA AACTAGTAAC CCGGTTTCG TGGGACCACT GCCAATCGAG TCGCAGCTG TTTCAGGTT  
 1201 GCGTGTTCG GCTGGCTCCG AGCAGCAAAA GCACCGCGG CCGCAGCGCT GCCCTGGCT GCCTGGTTAA AGATTATTTC CCGAACCAG TCACCGTAC  
 CGCACAAAG CGACCGAGG TCGTGTGTTT CTGCTGCGC GCGCTGCCA CCGGACCGA CGGACCAAT TCTAATAAG GGCCTTGGT AGTGGCACTC  
 1301 CTGGAACAGC GGGGCGCTGA CCAGCGCGT GCATACCTTT CCGGCGGTG TGCAAGCAG CGGCTGTAT AGCCTGAGCA CGCTTGTAC GTTCTGAGC  
 GACCTTGTG CCGCGGACT GGTGCGCGA CGTATGAAA GCGCGCCAG ACGTTTCGT CCGGACATA TCGGACTGT GCAACACTG GCAGGCTCG  
**EcoRI**  
 1401 AGCAGCTTAG GCACTCAGC CTATATTG CAGCTGAACC ATAAACGAG CAACACCAA GTGGATAAAA AAGTGAAC GAAAAGCGAA TTCACAGG  
 TCGTCAATC CGTACGCTG GATATAAAC TTGCACTGG TATTGGCTC GTTGTGGTT CACCTATTTT TTCACCTGG CTTTTCGCTT AAGGTCGCC  
**BssHI**  
**AscI** **HindIII**

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 HuCAL rev 100.04  
 1501 GGAGCGGAGG CGCGCGGCAC CATCATCACC ATCACTGCTG ATAAGCTTGA CCTGTGAAGT GAAAAATGCG GCAGATTGTG GCACATTTTT TTGTCTGCC  
 CCTCGCCTCC GCGCGCGGTG GTAGTAGTGG TAGTGACGAC TATTGCAACT GGACACTTCA CTTTTTACCG CGTCTAACAC GCTGTAAAAA AAACAGACGG  
 1601 GTTTAATGAA ATTGTAAACG TTAATATTTT GTTAAATTC GCGTTAAATT TTGTGTAAAT CAGCTCAFTT TTTAACCAAT AGGCCGAAAT CGGCAAAATC  
 CAAATTACTT TAACATTTGC AATTATAAAA CAATTTTAAG CGCAATTTAA AAACAATTTA GTCGAGTAAA AAATTTGGTTA TCGGGCTTTA GCGGTTTTAG  
 1701 CCTTATAAAT CAAAGAATA GACCGAGATA GGGTTGAGTG TTGTTCAGT TTGGAACAAG AGTCCACTAT TAAAGAAGCT GGACTCCAAC GTCAAAAGGC  
 GGAATATTTA GTTTTCTTAT CTGGCTCTAT CCCAACTCAC AACAGGTCA AACCTTGTTC TCAGGTGATA ATTTCTTGA CTTGAGGTG CAGTTTCCCG  
 1801 GAAAAACCGT CTATCAGGCG GATGGCCAC TACGAGAACC ATCACCCTAA TCAAGTTTTT TGGGGTCGAG GTGCCGTAAA GCACTAAATC GGAACCTTAA  
 CTTTTTGCA GATAGTCCCG CTACCGGGTG ATGCTCTTGG TAGTGGGATT AGTTCAAAAA ACCCCAGCTC CACGGCATTT CGTGATTAG CCTGGGATT  
 1901 AGGGAGCCCC CGATTAGAG CTTGACGGGG AAAGCCGGCG AACGTGGCGA GAAAGGAAGG GAAGAAAGCG AAAGGAGCGG GCGCTAGGCG GCTGGCAAGT  
 TCCCTCGGGG GCTAAATCTC GAACTGCCCG TTTCGGCCGC TTGCACCGCT CTTTCCTTCC CTTCTTTCCG TTTCCTGCC CGGATCCCG CGACCGTTCA  
 NheI  
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 2001 GTAGCGGTCA CGCTGCGGCT AACCAACACA CCGCGCGCGC TTAATGCGCC GCTACAGGCG GCGTCTAGC CATGTGAGCA AAAGGCGAGC AAAAGGCCAG  
 CATCGCCAGT GCGCGCGCGA TTGGTGGTGT GGGCGGCGCG AATTACGCGG CGATGTCCCG CGCAGGATCG GTACACTCGT TTTCCGGTCC TTTCCGGTCC  
 2101 GAACCGTAAA AAGCGCGGCT TGTGCGGCTT TTTCATAGG CTCGCGCCCC CTGACGAGCA TCACAAAAAT CGAGCGCTCA GTGAGAGGTG GCGAAACCGG  
 CTTGGCATTT TTCCGGCGCA ACGACGCGAA AAAGGTATCC GAGGCGGGGG GACTGCTCGT AGTGTTTTGA GCTGCGAGTT CAGTCTCCAC CGCTTTGGGC  
 2201 ACAGGACTAT AAAGATACCA GCGTTCCTCC CCTGGAAGCT CCTCGTGGG CTCTCTCTGT CCGACCTTGC CGCTTACCGG ATACCTGTCC GCCTTTCTCC  
 TGTCTGATA TTTCTATGCT CCGCAAGGG GGACCTTCGA GGGAGCACGC GAGAGGACAA GGCTGGGAGC GCGAATGGCC TATGGACAGG CGGAAAGAGG  
 2301 CTTGCGGAAG CGTGGCGCTT TCTCATAGCT CACGCTGTAG GTATCTCAGT TCGGTGTAGG TCGTTCGCTC CAAGCTGGGC TGTGTGACG AACCCCGGCT  
 GAAGCCCTTC GCACCGCGAA AGAGTATCGA GTGCGACATC CATAGAGTCA AGCCACATCC AGCAAGCGAG GTTCGACCCG ACACAGCTGG TTGGGGGCA  
 2401 TCAGTCCGAC CGTGGCGCTT TATCCGGTAA CTATCGTCTT GAGTCCAAAC CGGTAAAGCA GACTTTATCG CCACCTGGCAG CAGCCACTGG TAACAGGATT  
 AGTCAGGCTG GCGACGCGGA ATAGGCCATT GATAGCAGAA CTCAGGTGGG GCCATCTGTG GCTGAATAGC GGTGACCGTC GTGCGTGACC ATTGTCTTAA  
 2501 AGCAGAGCGA GGTATGTAGG CGGTGCTACA GAGTCTTGA AGTGGTGGCC TAACTACGGC TACACTAGAA GAACAGTATT TGGTATCTGC GCTCTGCTGT  
 TCGTCTCGCT CCATACATCC GCCACGATGT CTCAAGAACT TCACCACCGG ATTGATGCGG ATGTGATCTT CTTGTCTATA ACCATAGAGC CGAGACGACA  
 2601 AGCCAGTTAC CTTGCGAAAA AGAGTTGGTA GCTCTGATC CGGCAACAA ACCACCGCTG GTAGCGGTGG TTTTCTTGTG TGCAAGCAGC AGATTACGGC  
 TCGGTCAATG GAAGCCTTTT TCTCAACCAT CGAGAAGTAG GCGGTTTGTG TGGTGGCGAC CATCGCCACC AAAAAACAA AGCTTGTGTG TCTAATGGCC  
 BglII  
 -----  
 2701 CAGAAAAAAA GGATCTCAAG AAGATCCTTT GATCTTTTCT ACGGGGCTG ACGCTCAGTG GAACGAAAA TCAGGTTAAG GGATTTTGGT CAGATCTAGC  
 GTCTTTTTTT CCTAGAGTTC TTCTAGGAAA CTAGAAAAA TGCCCCAGAC TCGAGCTCAC CTGCTTTTGT AGTGCAATTC CTTAAAAACA GTCTAGATCG  
 2801 ACCAGGCGTT TAAGGGCACC AATACTGCC TTAATAAATG TACGCCCGCG CCGGCCACTC ATCGCAGTAC TGTGTGAATT CATTAAGCAT TCTGCGGACA  
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 ACCTTCCGTA GTGTTTCCCG TACTACTTGG ACTTAGCGGT CGCGGTAGTC GTGGAACAGC GGAACGCATA TTATAAACGG GTATCACTTT TCGCCCGGCT  
 3001 AGAAGTGTG CATATTGGCT ACGTTTAAAT CAAAAGTGGT GAAACTCACC CAGGGATTGG CTGAGACGAA AAACATATTC TCAATAAAC CTTTAGGGAA  
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 AGTCAAAACGA GTACCTTTTG CCACATTTGT CCCACTTGTG ATAGGCTGATA GTGCTGAGT GGCAGAAAGT AACGGTATGC CTTGAGGCCC ACTCGTAACT  
 3301 TCAGGCGGGC AAGAATGTGA ATAAAGGCGG GATAAACTT GTGCTTATTT TTCTTTACGG TCTTTAAAAA GCGCGTAATA TCACGTGAA CCGTCTGGTT  
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 3401 ATAGGTACAT TGAGCAACTG ACTGAAATGC CTCAAAATGT TCTTTACGAT GCCATTGGGA TATATCAAGC GTGGTATATC CAGTGATTTT TTTCTCCATT  
 TATCCATGTA ACTCGTTGAC TGACTTTAGC GAGTTTTTACA AGAAATGCTA CCGTAACCTT ATATAGTTGC CACCATATAG GTCACTAAAA AAAGAGGTAA  
 AatII  
 -----  
 3501 TTAGCTTCCT TAGCTCTGTA AAATCTCGAT AACTCAAAAA ATACGCCCGG TAGTGATCTT ATTTTATTAT GGTGAAAGTT GGAACCTCAC CGAGGTCTA  
 AATCGAAGGA ATCGAGGACT TTTAGAGCTA TTGAGTTTTT TATGCGGGCC ATCACTAGAA TAAAGTAATA CCACCTTCAA CTTGAGAGTG GGCTGCAGAT  
 ML3 rev 100.04  
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FIG. 2B-2

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3601 ATGTGAGTTA GCTCACTCAT TAGGCACCCC AGGCTTTACA CTTTATGCTT CCGGCTCGTA TGTTCGTGGG AATTGTGAGC GGATAACAAT TTCACACAGG  
TACACTCAAT CGAGTGAGTA ATCCGTGGGG TCCGAAATGT GAAATACGAA GGCCGAGCAT ACAACACACC TTAACACTCG CTTATTGTTA AAGTGTGTCC  
M13 rev 100.0%

\*\*\*\*\*

3701 AAACAGCTAT GACCATGATT ACGAATTTCT AGTATACGAG GGCAAAAAT GAAAAAAGT CTGTTCCGGA TTCCGCTGGT GGTGCGGTTT TATAGCCATA  
TTTGTGATA CTGGTACTAA TGCTTAAAGA TCATATGCTC CCGTTTTTIA CTTTTTTGAC GACAAGCGCT AAGGCGACCA CCACGGCAAG ATATCGGTAT  
3801 GCGACTACTG CGACATCGAG TTTGCAGAAA CAGTTGAAAG TTGTTTAGCA AAACCCATA CAGAAAATTC ATTTACTAAC GTCTGGAAAG ACGACAAAAC  
CGCTGATGAC GCTGTAGCTC AAACGTCCTT GTCAACTTTC AACAAATCGT TTTGGGGTAT GTCTTTTAAG TAAATGATTG CAGACCTTTC TGCTGTTTTG  
3901 TTTAGATCGT TAGGCTAACT ATGAGGGCTG TCTGTGGAAT GCTACAGGCG TTGTAGTTTG TACTGGTGAC GAAACTCAGT GTTACGGTAC ATGGGTTTCT  
AAATCTAGCA ATGCGATTGA TACTCCCGAC AGACACCTTA CGATGTCCGC AACATCAAAAC ATGACCACTG CTTTGAGTCA CAATGCCATG TACCCAAGGA  
4001 ATTGGGCTTG CTATCCCTGA AAATGAGGGT GGTGGCTCTG AGGGTGGCGG TTCTGAGGGT GGGGCTCTG AGGGTGGCGG TACTAAACCT CCGAGTACG  
TAACCCGAAC GATAGGGACT TTTACTCCCA CCACCGAGAC TCCACCGCC AAGACTCCCA CCGCCGAGAC TCCACCGCC ATGATTTGGA GGACTCATGC  
4101 GTGATACACC TATTCGGGGC TATACCTTATA TCAACCTCT CTACGGCACT TATCCGCTG GTACTGAGCA AAACCCCGCT AATCTTAATC CTTCTCTTGA  
CACTATGTGG ATAAGGCCCC ATATGAATAT AGTTGGGAGA GCTGCCGTGA ATAGGCGGAC CATGACTCGT TTTGGGGCGA TTAGGATTAG GAAGAGAACT  
4201 GGAGTCTCAG CCTCTTAATA CTTTCATGTT TCAGAATAAT AGGTTCCGAA ATAGGCGAGG GGCATTAATC GTTTATACGG GCACTGTTAC TCAAGGCACT  
CCTCAGAGTC GGAGAATTAT GAAAGTACAA AGTCTTATTA TCCAAGGCTT TATCCGTCCC CGTAAATGA CAAATATGCC CGTGACAATG AGTTCGGTGA  
4301 GACCCCGTTA AAACCTTATTA CCAGTACACT CCTGTATCAT CAAAGCCAT GTATGAGCT TACTGGAAAG GTAAATTCAG AGACTGGGCT TTCCATTCTG  
CTGGGGCAAT TTTGAATAAT GGTCACTGTA GGACATAGTA GTTTTCGTA CATACTGGA ATGACCTTGC CATTTAAGTC TCTGACCGGA AAGGTAAAGC  
4401 GCTTTAATGA GGATCCATTC GTTTGTGAAT ATCAAGGCCA ATGCTCTGAC CTGCTCAAC CTCTGTCAA TGCTGGCGGC GGCTCTGGT GTGGTCTGG  
CGAAATTAAT CTTAGGTAAG CAAACACTTA TAGTTCCGGT TAGCAGACTG GACCGAGTTG GAGGACAGTT ACGACGCGG CCGAGACCA CACCAAGACC  
4501 TGGCGGCTCT GAGGGTGGCG GCTCTGAGGG TGGCGGTTCT GAGGGTGGCG GCTCTGAGGG TGGCGGTTCC GGTGGCGGCT CCGGTTCCGG TGATTTTGAT  
ACCGCCGAGA CTCCACCGCG CGAGACTCCC ACCGCCAAGA CTCCACCGCG CGAGACTCCC ACCGCCAAGG CCACCGCGGA GGCCAAGGCC ACTAAACTA  
4601 TATGAAAAAA TGGCAAAAGC TAATAAGGGG GCTATGACCG AAAATGCGGA TGAACACCGG CTACAGTCTG ACGCTAAAGG CAACTTGAT TCTGTGCTA  
ATACTTTTTT ACCGTTTGGG ATTATTCGCC CGATAGTGGC TTTTACGGCT ACTTTTGCCG GATGTCAGAC TGGGATTTCC GTTTGAATA AGACAGCGAT  
4701 CTGATTACGG TGCTGCTATC GATGGTTTCA TTGGTGACGT TTCCGGCCCT GCTAATGTTA ATGGTGCTAC TGGTGATTTT GCTGGCTCTA ATTCCCAAT  
GACTAATGCC ACGACGATAG CTACCAAAGT AACCACTGCA AAGGCCGGA CGATTACCAT TACCAGATG ACCACTAAAA CGACCGAGAT TAAGGGTTTA  
4801 GGCTCAAGTC GGTGACGGTG ATAATTACCC TTTAATGAAT AATTTCCGTC AATATTTACC TTCTTTGCTT CAGTCCGTTG AATGTCGCCC TTATGCTTTT  
CCGAGTTTCA CCACTGCCAC TATTAAGTGG AAATTAATTA TTAAGGCAG TTATAAATGG AAGAAACGGA GTACGCCAAC TTACAGGGGG AATACAGAAA  
4901 GGGCTGGTA AACCATATGA ATTTTCTATT GATTGTGACA AAATAAATTT ATTCGCTGGT GTCTTTTCTA TGTTCGCCACC TTTATGTATG  
CCGCGACCAT TTGTATATCT TAAAAGATAA CTAACACTGT TTTATTTGAA TAAGGCACCA CAGAAACGCA AAGAAAATAT ACAACGGTGG AAATACATAC

XbaI

AflII

5001 TATTTTCGAC GTTTGCTAAC ATACTGCGTA ATAAGGAGTC TTAAGTAAT  
ATAAAGCTG CAAACGATTG TATGACGCAT TATTCCTCAG AATTCATTA

FIG. 2B-3

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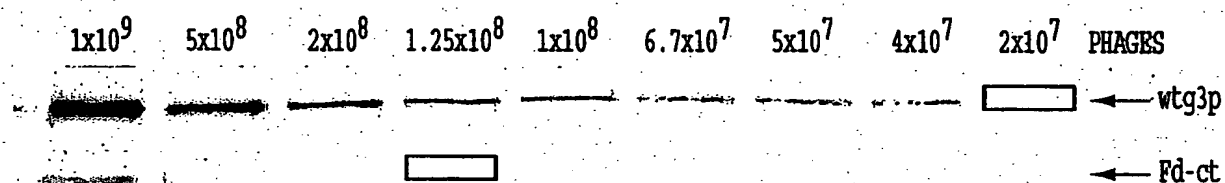


FIG. 3

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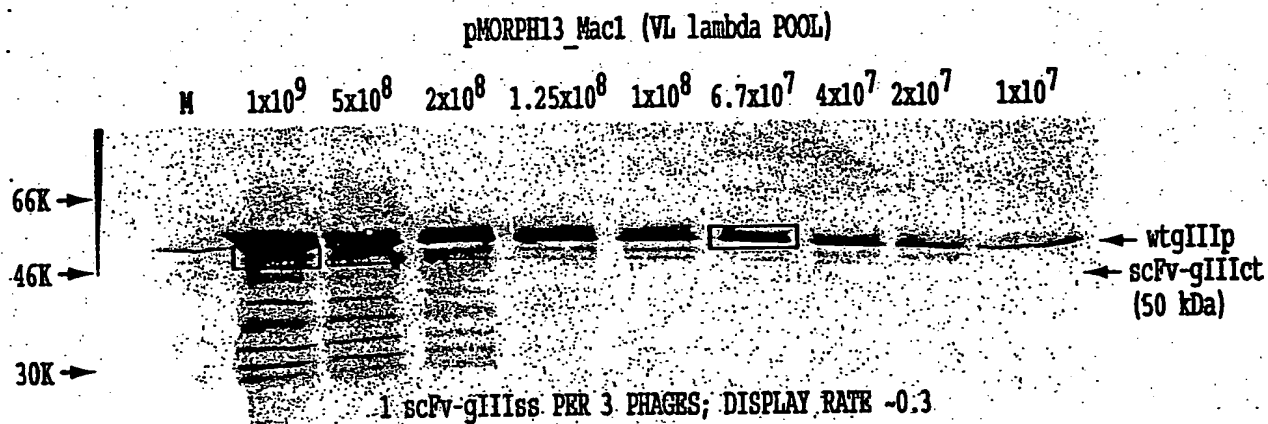


FIG. 4A

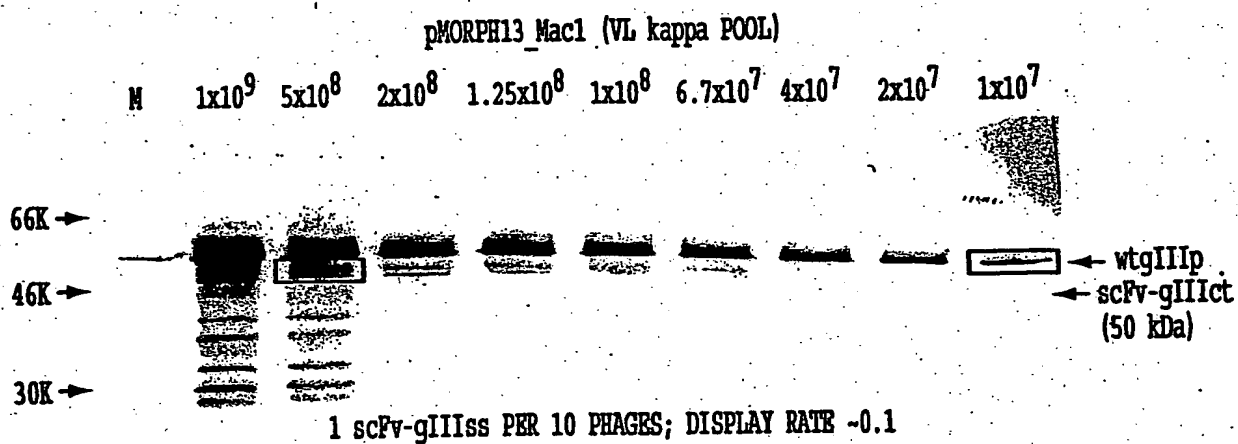


FIG. 4B

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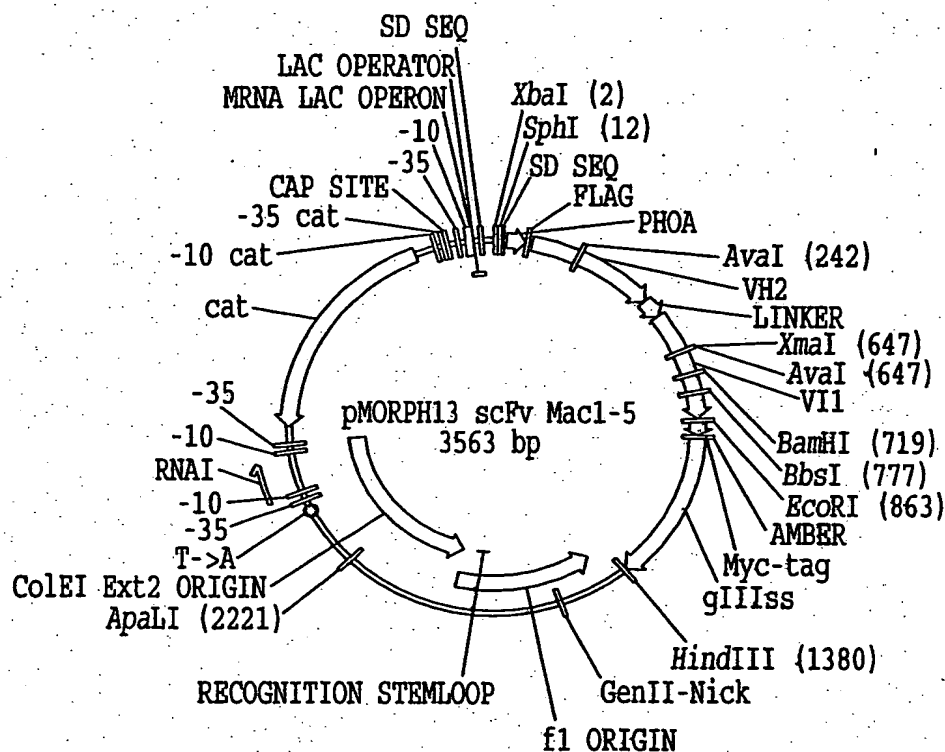


FIG. 4C



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tgattgggatgatgataagattatagcaccagcctgaaaacgcgtctgaccattagcaaagatacttcgaaaaatcaggtgggtgct  
gactatgaccaacatggaccgggtggatacggccacctattattgcgcgcgttttgatccttttttgattccttttttgattattggggc  
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tatgttgtgtggaattgtgagcggataacaatttcacacaggaacacgctatgacctgattacgaatt

FIG. 4D

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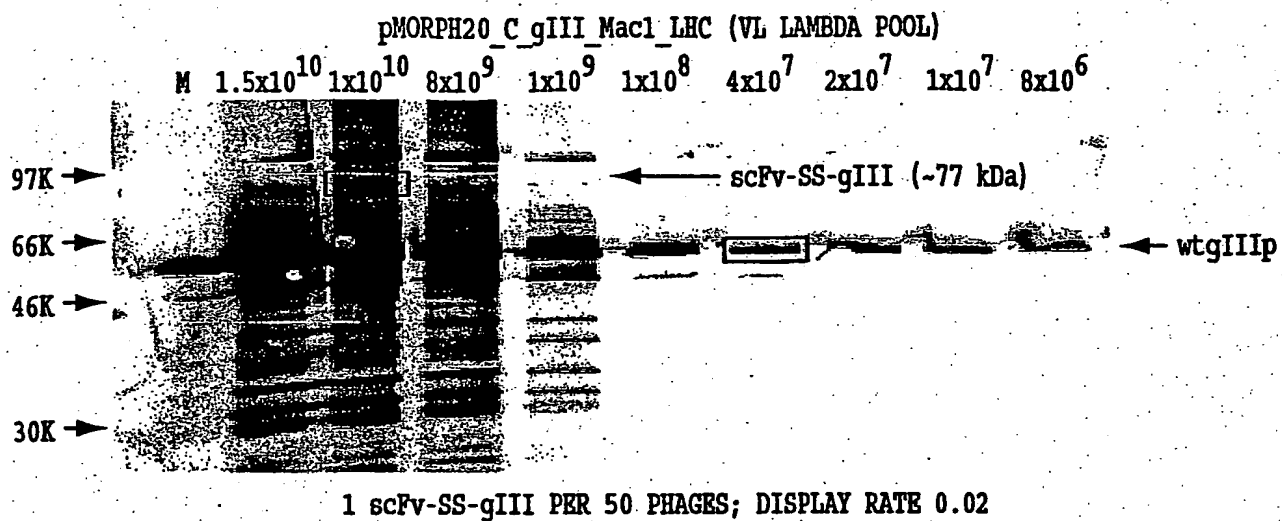


FIG. 5A

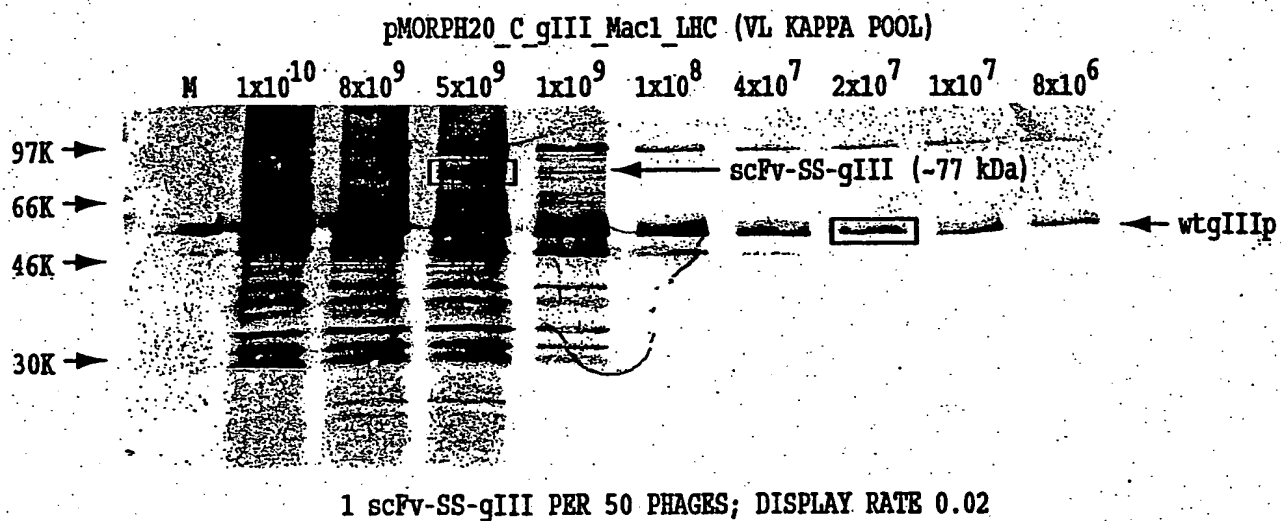


FIG. 5B

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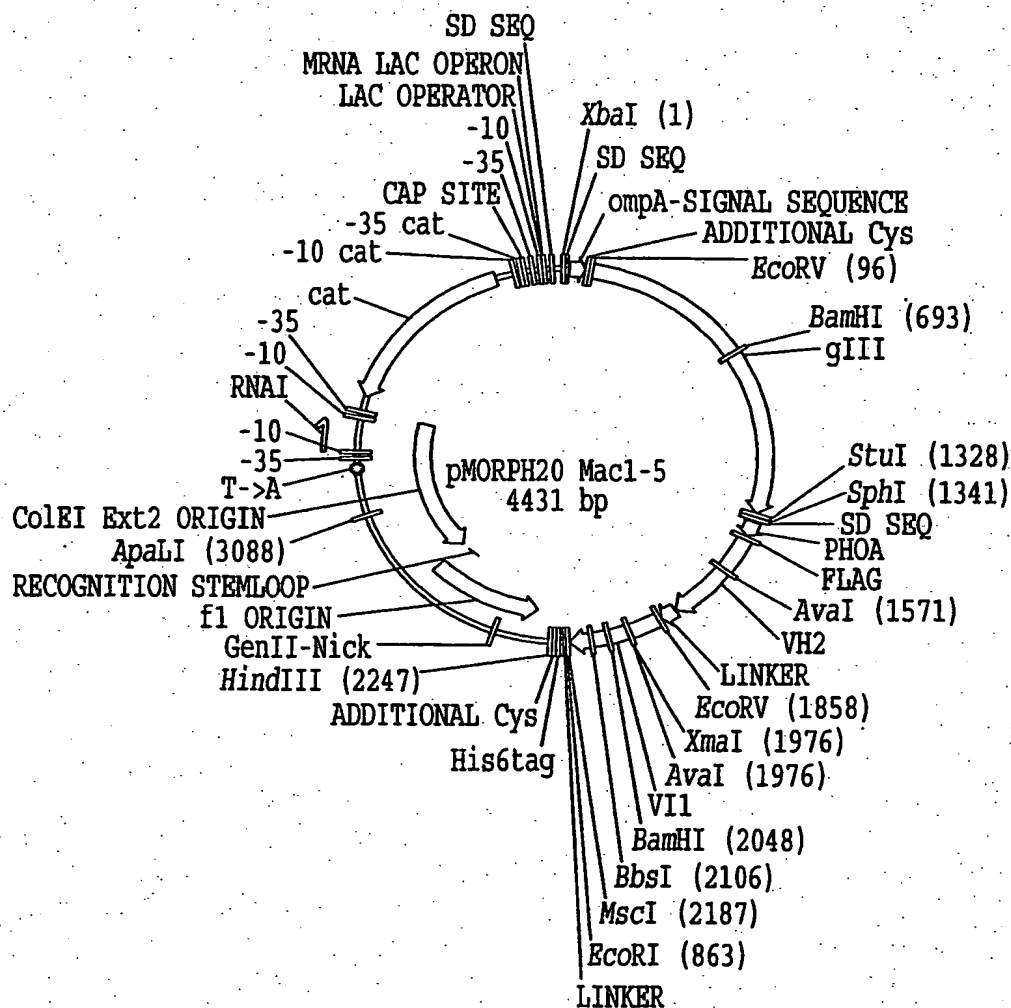


FIG. 5C

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FIG. 5D

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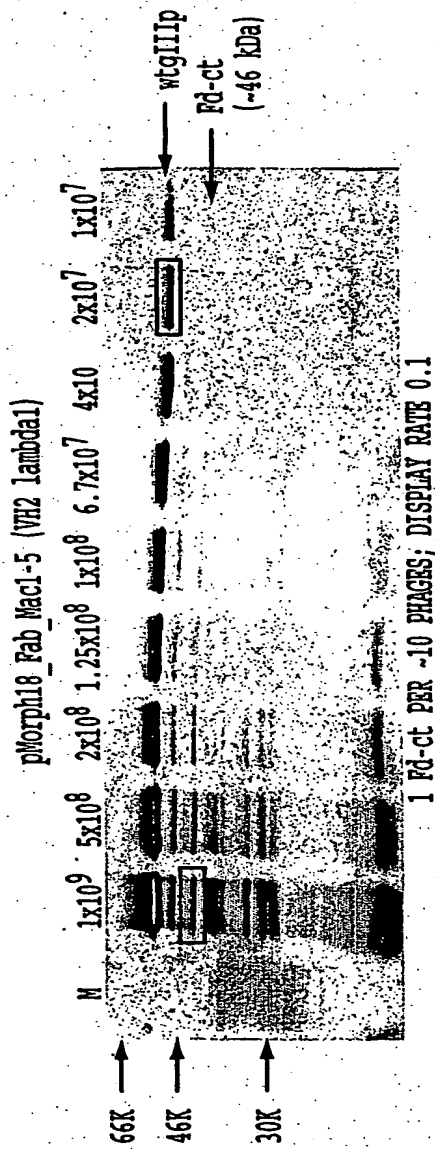


FIG. 6A

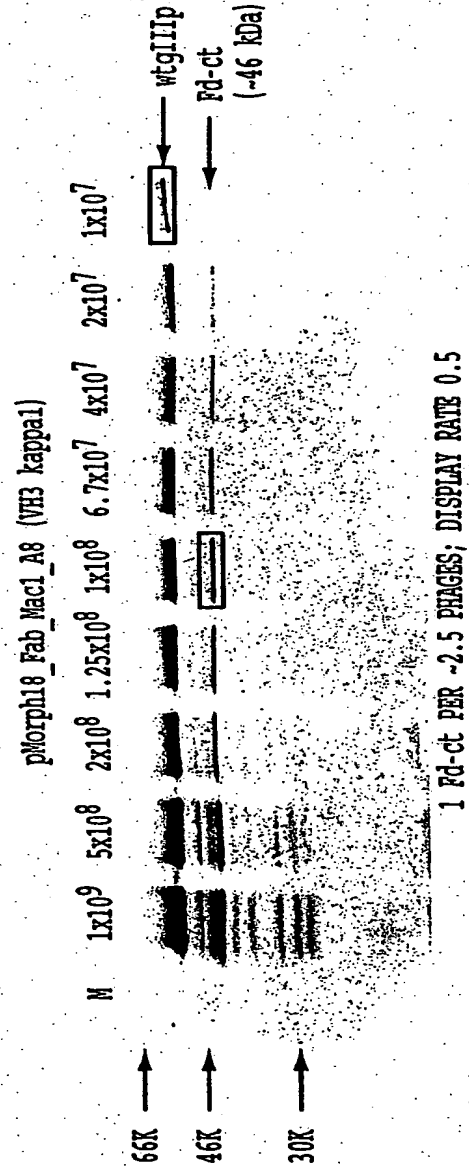


FIG. 6B

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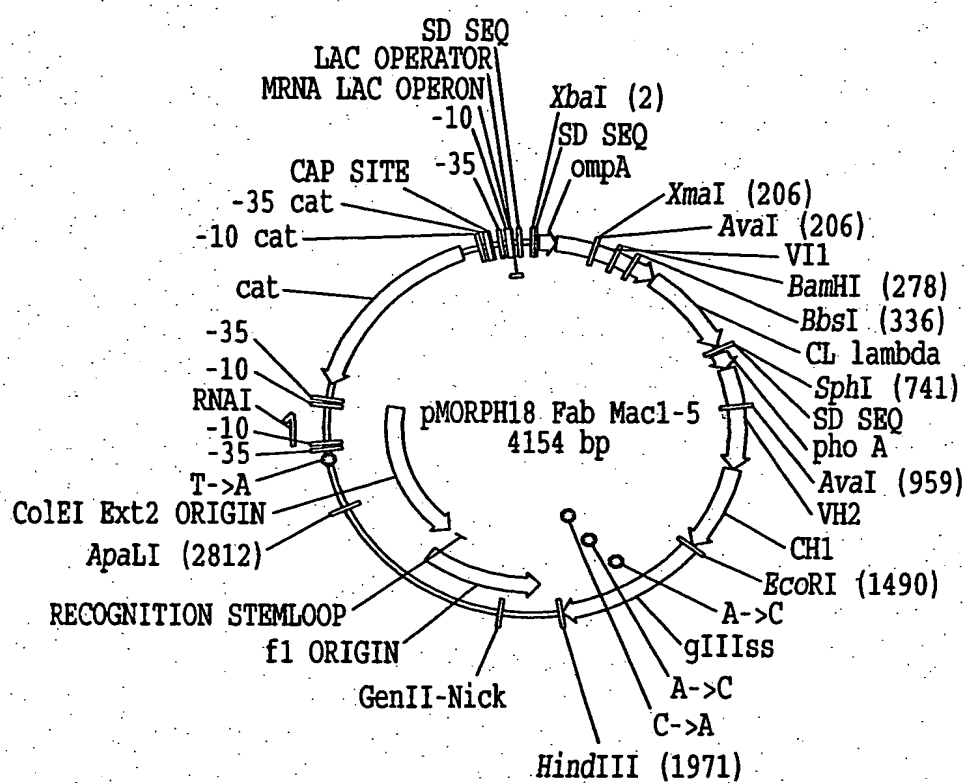


FIG. 6C

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FIG. 6D

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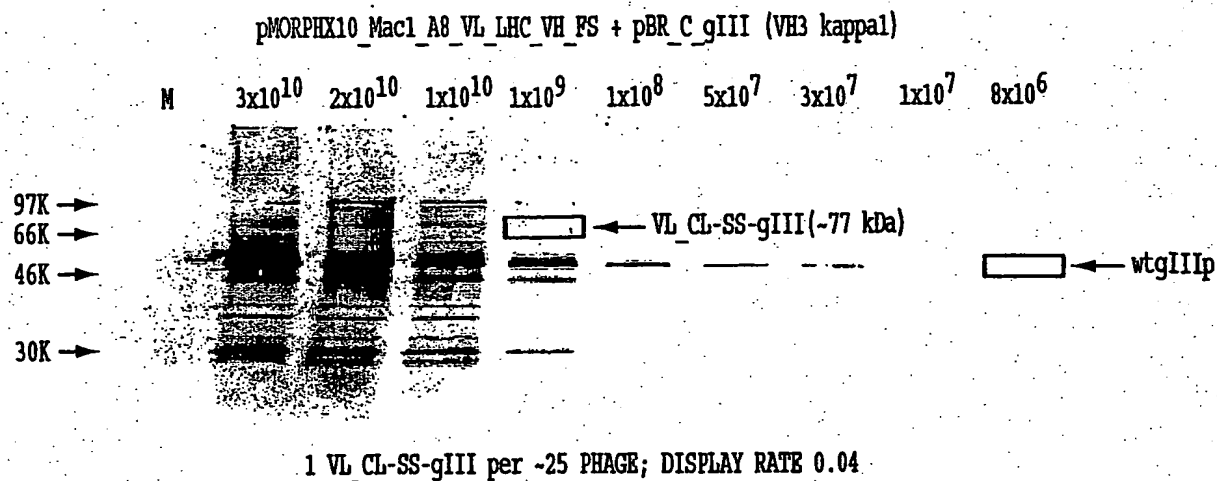


FIG. 7A

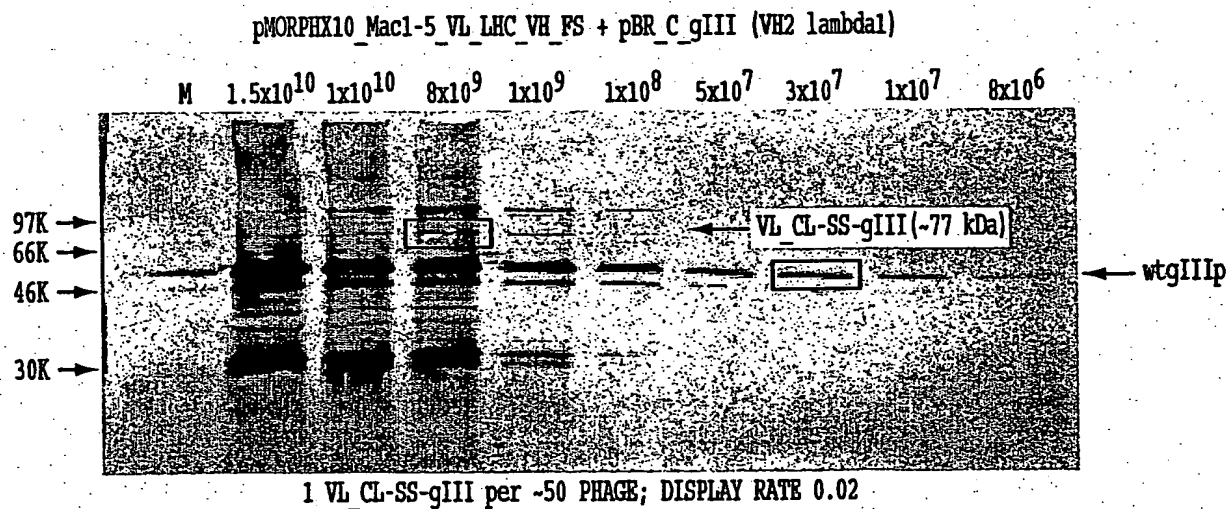


FIG. 7B



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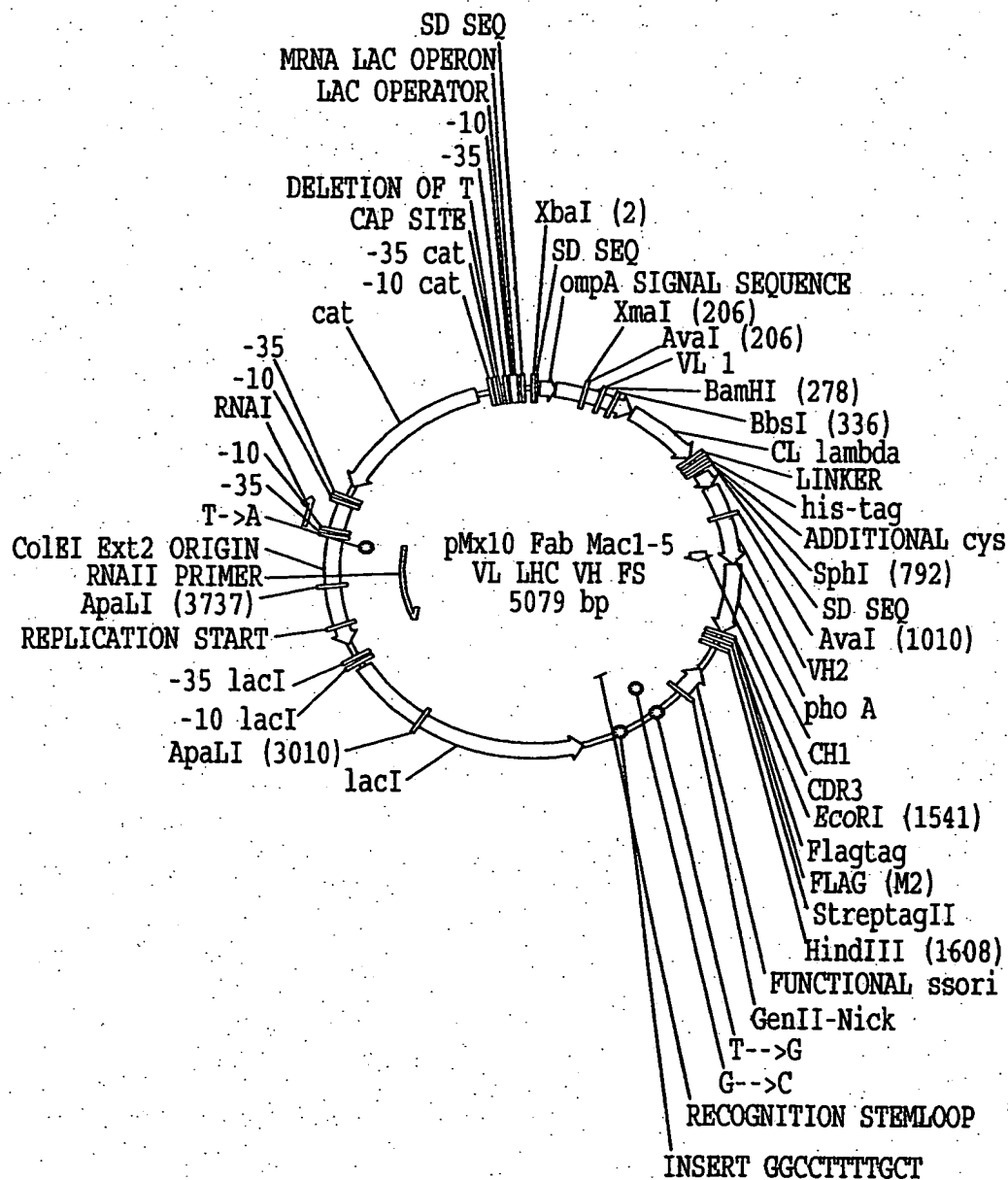


FIG. 7C

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FIG. 7D

SUBSTITUTE SHEET (RULE 26)

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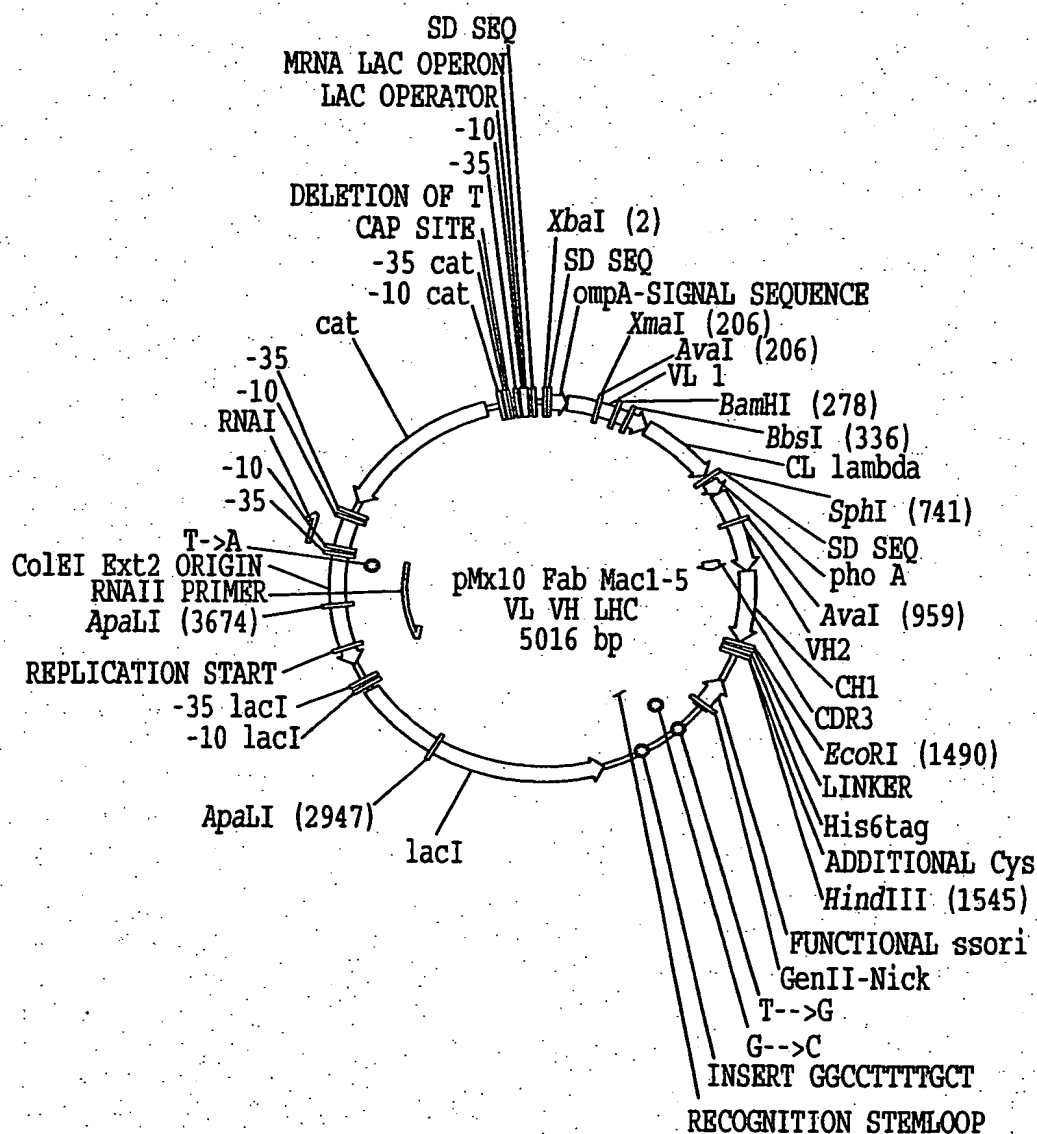


FIG. 7E

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FIG. 7F

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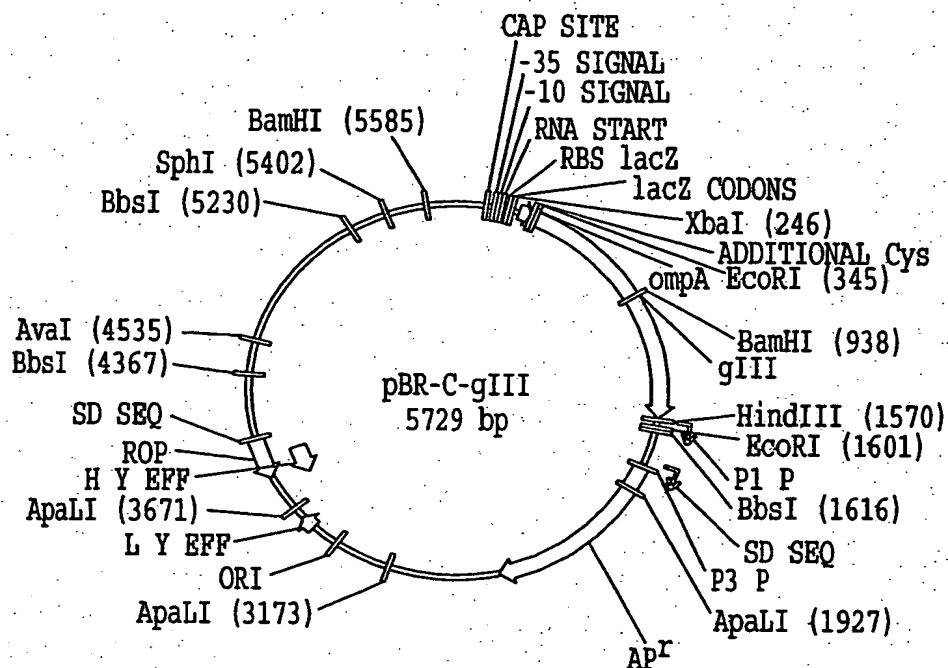


FIG. 7G

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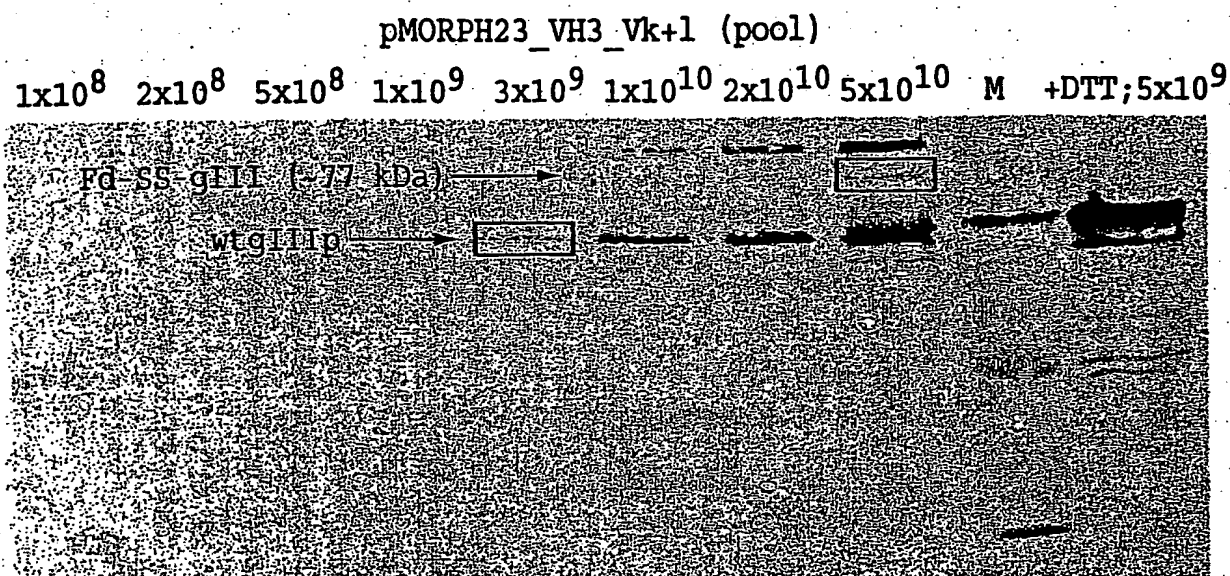
FIG. 7H-1

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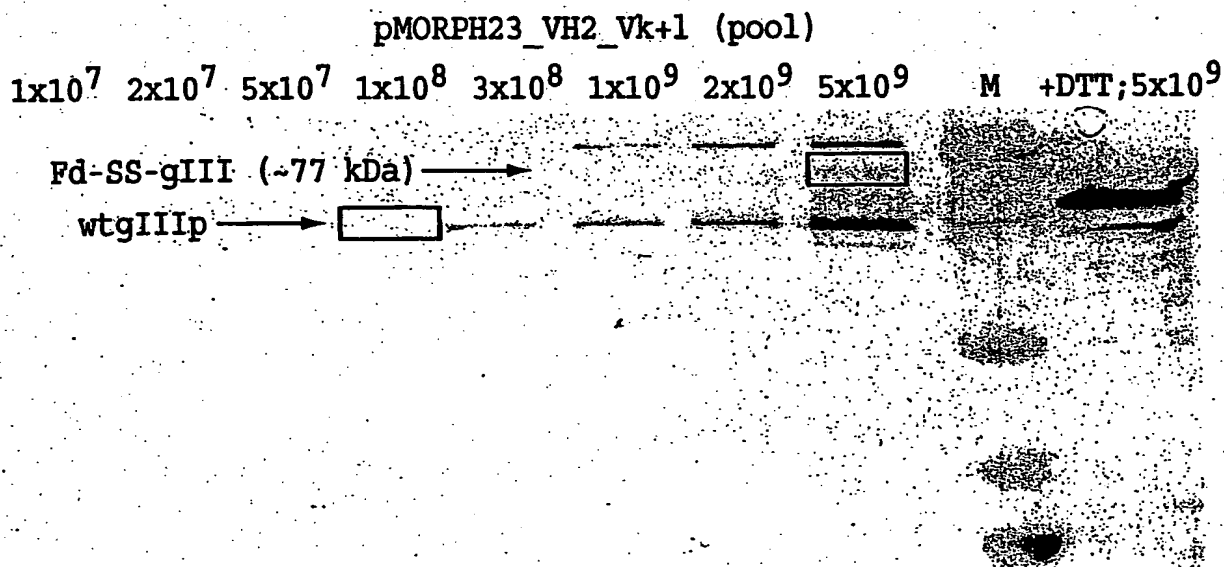
FIG. 7H-2

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1 Fd-SS-gIII PER ~3 PHAGE; DISPLAY RATE 0.3

FIG. 8A



1 Fd-SS-gIII PER ~10 PHAGE; DISPLAY RATE 0.1

FIG. 8B



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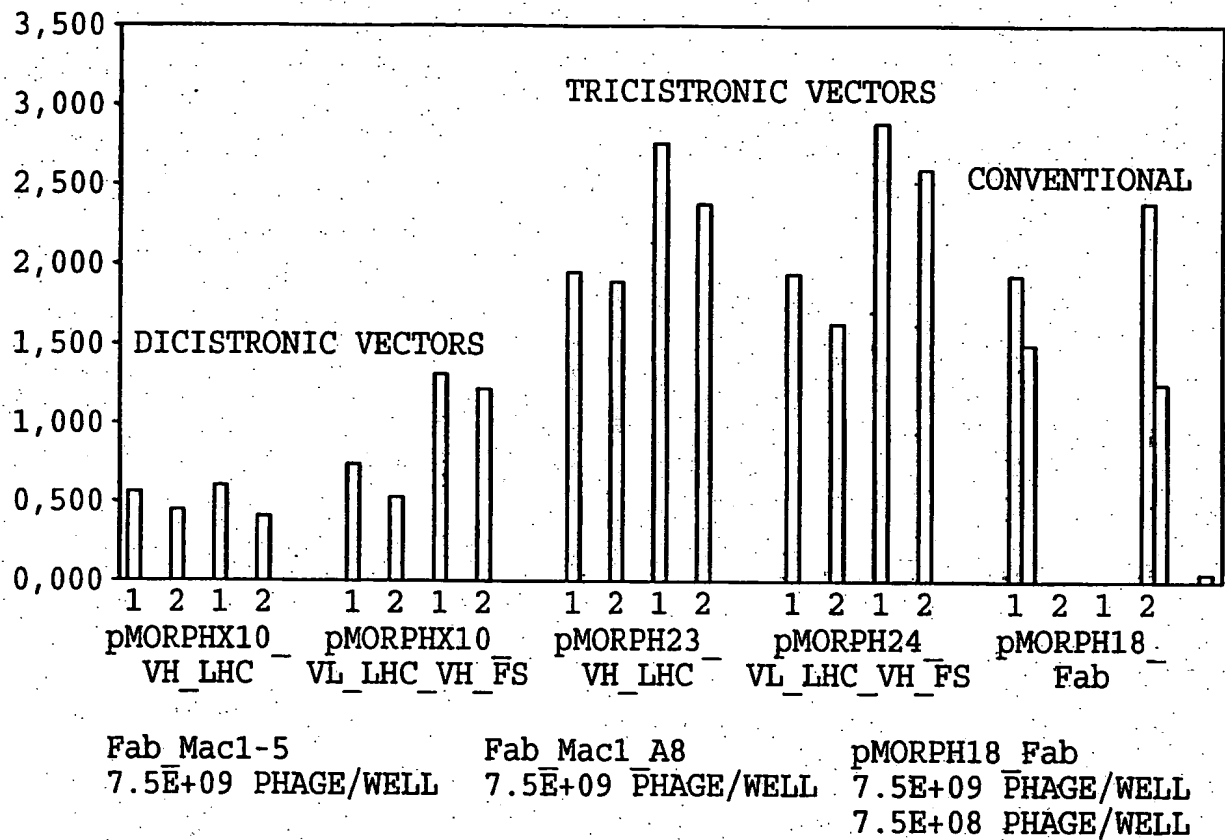


FIG. 9